IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	)
Akihiko HIRATSUKA et al.	) Group Art Unit: 3753
Serial No. 10/553,959	) Examiner: John C. Fox
Filed: October 19, 2005	) Confirmation No. 9879
For: HEATER UNIT FOR INSTALLATION ON VALVE	) Date: July 16, 2010

DECLARATION UNDER 37 CFR 1.132

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450Great
Alexandria, VA 22313-1450

Sir:

We, Akihiko Hiratsuka and Tsuguhiro Nomoto, the applicants, declare as follows:

1. I, Tsuguhiro Nomoto, graduated from Tamagawa University in March 1982, with a degree from the Engineering Department in Mechanical Engineering. I am employed by Tokyo Technological Labo Co., Ltd. since April, 1982. My main research work at the Tokyo Technicalogical Labo is in Engineering Plasticity. My current position is President of the assignee, Tokyo Technicalogical Labo Co. Ltd., and I have a central role in the presently claimed invention.

2. I, Akihiko Hiratsuka, graduated fromTamagawa University in March 2001, with a degree from the Engineering Department in Management Engineering. I am employed by Tokyo Technological Labo Co., Ltd. since October, 2001. My main work is in sales of products, and my current position is Deputy section chief of sales section at the Tokyo Technicalogical Labo Co. Ltd.. I have a central role in the decision of the specification of products related to the presently claimed invention.

3. We are familiar with Minami (US 6,060,691 – hereinafter Minami or the cited reference), which has been relied upon by the Examiner in the Office Action mailed February 18, 2010, as well as in prior Office Actions. We firmly believe that the rejection of claims 1-3 under 35 U.S.C. §103(a) over Minami in view of Yamaji (US 2003/0005959 – hereinafter Yamaji) is insupportable based on our experiment conducted on December 17, 2007, which clearly shows unexpected results that demonstrate superior characteristics of the presently claimed invention compared to that of Minami. The experiments conducted on December 17, 2007 will be described and analyzed in detail hereinafter. Further, an earlier experiment was conducted on June 4, 2003, which shows quick temperature stabilization and temperature differences between various measurement positions due to the claimed features of the present invention. In addition to demonstrating unexpected and advantageous results, it can be seen that the results of the experiments reflect the design features (i.e., the claimed features) that cannot be inherently achieved by Minami because of the difference in design and functionality between the present invention and Minami.

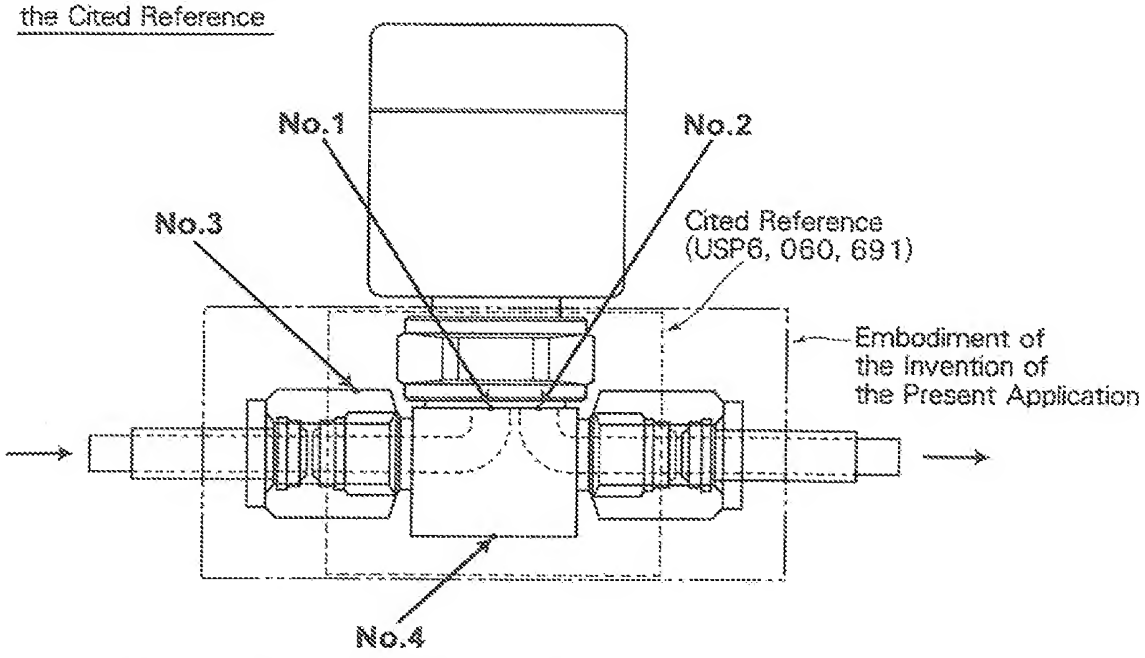
4. Summary of Experiment Conducted on December 17, 2007

In this experiment, the temperature distributions in a state in which fluid is not caused to flow were compared between a valve mounted heater unit according to the invention of the present application and a fluid controller heating device of Minami.

In the experiment, the temperatures of control sections were controlled by temperature adjusting devices driven at a voltage of 100V.

An illustration for the purpose of comparing the present invention and Minami is shown below with four (4) measurement positions. In the embodiment of the invention of the present application, the control section was provided at the interior of a housing toward the side of a heater surface. In the embodiment of the invention of Minami, the control section was provided at the interior of a housing toward the bottom surface of the body of a valve.

1. Comparison between the configurations of the Embodiment of the Invention of the Present Application (Us Application No.10/553, 959) and the Embodiment of the Cited Reference



In the experiment, both the embodiment of the invention of the present application and the embodiment of Minami were controlled to be 115℃ by the temperature adjusting devices.

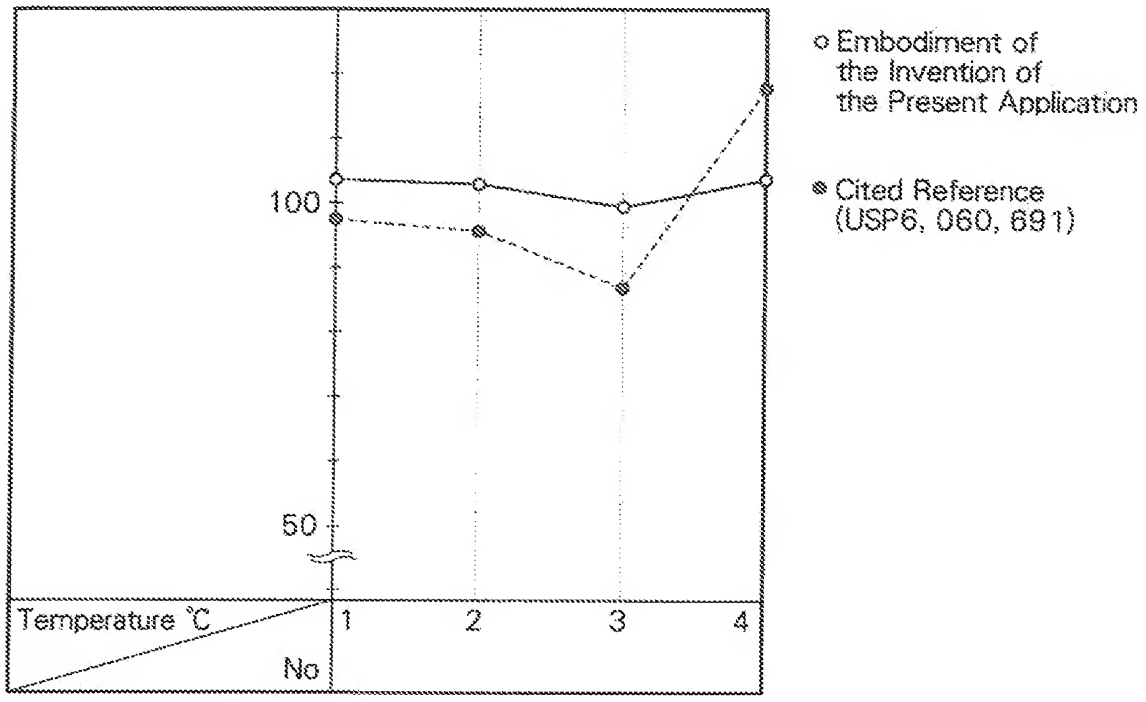
5. Results of Temperature Measurements (in units of ℃) at Measurement Positions No. 1 through No. 4 in the illustration above:

No.	Measurement Position	Present Invention	Minami (US 6,060,691)
1	Diaphragm	103.6	97
2	Diaphragm OUT	102.3	95.2
3	Joint Nut Portion	98.3	86.3
4	Bottom Surface of Block	103.3	116.9

The temperatures summarized in the table above are values measured after one hour for the embodiment of the present invention, and after two hours for the embodiment of Minami, and a comparison of temperature distributions graph is shown below for each of the measurement positions nos. 1 – 4.

As shown in a comparison of temperature distributions graph, the outline of the housing of the embodiment of the invention of the present application is indicated by the outer virtual line, and the housing of the embodiment of Minami is indicated by the dotted line, wherein the horizontal axis represents measurement positions, and the vertical axis represents temperatures (℃):

2. Comparison of Temperature Distributions



6. Observations of the Results of the Experiment Conducted December 17, 2007

Based on the results presented above, Applicant respectfully submits that the embodiment of the invention of the present application covers the joint nut portions of the valve, and heat discharge is advantageously suppressed more than by the embodiment of Minami.

Furthermore, the temperature differences between the joint nut portions and the bottom surfaces of the block were:

1) Embodiment of the invention of the present application: 103.3℃ (bottom surface of the block) – 98.3℃ (joint nut portion) = 5℃, and

2) Embodiment of the cited reference: 116.9℃ (bottom surface of the block) – 86.3℃ (joint nut portion) = 30.6℃.

As shown in 1) and 2) above, the temperature difference is small in the invention of the present application, but large in the invention of Minami.

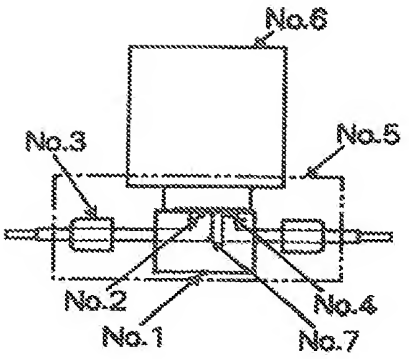
Moreover, the temperatures within the valve (i.e., at measurement positions Nos. 1 and 2) did not exceed 100℃ in the embodiment of Minami at two hours after initiation of temperature control. In contrast, the temperature was elevated and stabilized in approximately 40 minutes in the embodiment of the invention of the present application, and the temperature difference between the interior of the valve and the nut portion was small.

In addition to the above-mentioned advantages of the present invention in comparison with Minami, the embodiment of the invention of the present application advantageously enables easier mounting and removal of the heater with respect to the valve.

7. Summary of Experiment Conducted on June 4, 2003

In this experiment, the temperature distributions in a state in which fluid is not caused to flow were measured and compared for an embodiment (high temperature valve mounted heater unit) of the invention of the present application. The temperatures of a control section were controlled by a temperature adjusting device driven at a voltage of 100V.

An illustration for the purpose of comparing the present invention and Minami is shown below with eight (8) measurement positions. This illustration, as well as a time vs. temperature graph and a color rendition of the illustration, is also include in an attachment (Attachment A) provided herewith.



In the embodiment of the invention of the present application, the control section was provided at the interior of a housing toward the bottom surface of the body of a valve. Further, both the embodiment of the invention of the present application and the embodiment of the Minami were controlled to be 300°C by the temperature adjusting devices.

8. Results of Temperature Measurements (in units of °C) at Measurement Positions No. 1 through No. 8

No.	Measurement Position
1	Bottom Surface of Block (Control Section)
2	Diaphragm IN
3	Nut Portion
4	Diaphragm OUT
5	Outer Mounting Portion of Case (Side)
6	Valve Head Portion
7	Interior of Pipe
8	Outside Temperature

Changes in temperatures recorded in the time vs. temperature graph for the measurement positions nos. 1 to 8 shown in Attachment A of the present invention were observed for two hours from initiation of measurements. Wherein the horizontal axis of the time vs. temperature graph represents the passage of time (hours, minutes, and seconds), and the vertical axis represents temperatures (°C).

9. Observations of the Results of the Experiment Conducted on June 4, 2003

The temperature of the interior of the housing became stable after approximately 40 minutes from initiation of measurements. The temperature differences among each measurement position are small.

10. In the presently claimed invention, as recited in claim 1, the heater unit includes a radiant heating section, surrounding the direct heating section, and extending to an area of the flow path forming sections, excluding an area which is brought into direct contact with the direct heating sections, the pair of joints and a part of each of the sleeves, enclosed by the main body, configured to heat the inside of the main body by radiant heat, wherein each of the pipe through-holes has a diameter for receiving each of the sleeves, and the flow path forming sections including the body, the whole of the pair of the joints, and the part of the sleeves are entirely covered by the main body so that only the residual areas of the sleeves and the fluid piping system is exposed from the pipe through-holes, and the area extending from the part of one sleeve to the part of the other sleeve excluding the area which is brought into direct contact with the direct heating sections, enclosed by the main body, are constructed so as to be heated by the radiant heat from the radiant heating section.

Generally, according to claim 1, the heater unit covers the area extending from a part of one sleeve to a part of another sleeve, including a flow path forming section and joints. However, based at least on the above-discussed experimental results, because Minami fails to teach, disclose, or suggest at least the features recited in claim 1 and, therefore, cannot provide the aforementioned desirable characteristics of the presently claimed invention as evident by the aforementioned test results. As such, even if Minami were combinable with Yamaji, Applicants' claimed invention cannot be achieved by the cited prior art as supported by the test results.

11. Each undersigned Declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

July 14, 2010 — Akihiko Hiratsuka

Date — Akihiko Hiratsuka

July 14, 2010 — Tsuguhiro Nomoto

Date — Tsuguhiro Nomoto